-----Original Message-----
From: Charlie Henry [mailto:Charlie.Henry@noaa.gov]
Sent: Friday, May 14, 2010 08:40 AM Eastern Standard Time
To: Hanzalik, James CAPT; Craig; stephen_spencer@ios.doi.gov; karolien.debusschere@LA.GOV; Dwight Bradshaw
Cc: Dave Westerholm; william.conner; John Tarpley; Debbie Payton; Steve Lehmann; David Dale; Robert Hoffman; Robert Haddad; alan.mearns Mearns
Subject: RRT6 Sea Floor Dispersant Use (Initial NOAA Input)

Regional Response Team 6 (RRT6) is requesting concurrence from NOAA to provide the Federal On-Scene Coordinator (USCG) a recommendation as to a decision to use a sea floor application of dispersants to assist in mitigating the continuous release of oil from the Deepwater Horizon incident. The amount of Corexit 9500 dispersant to be applied to the sea floor is estimated at 14,400 gallons per day based on 10 gallons/minute.
A written plan from the Unified Command as to the path forward has not been submitted to RRT6 as this is written, but is expected soon. It is expected to contain specific review points for continued use if approved. This email provides information that may be useful in the discussion. I have sent this to the key RRT6 members and many of NOAA's key staff in the region. It is up to each of the represented agency officials to determine who should also have this information. I would appreciate any and all comments as the discussion continues.

NOAA wants to make sure that our concerns about possible impacts of oil and dispersants on both the surface waters, water column, and sea floor flora and fauna (including eggs and larvae) have been registered. The proposed actions are not without potential and substantive risks. They are unknowns to the overall trade-off discussion, and these have been articulated in this memo and attached draft assessments. NOAA requires that steps will be taken to do the monitoring needed to evaluate environmental impacts of the dispersants and dispersed oil so we can better understand the threat in the short term before committing to the long term use of this technique. Monitoring must extend from the sea surface to the sea floor (some 5000 feet in depth). NOAA recognizes that such a major spill require tough choices. No options are good ones with the exception of stopping the flow of oil. NOAA recommends that sea floor dispersant use be managed such that monitoring and review of the data would lead to an overall consensus of stakeholder support for any long-term use of this option.

During the discussion and initial testing phase of the sea floor dispersant technique (injection of dispersant directly into and at the riser), the Environmental Unit developed a strategy to assess associated trade-offs. The assessment process included identification of the receptors (habitats and species potentially affected), expected transport and fate of dispersed and undispersed oil, and a monitoring plan that included possible decision criteria for reconsidering (and
stopping) the use of dispersants at the sea floor. This mitigation option doesn’t stop the flow oil, but may alter the nature of the oil such that there is a shift in which resources are impacted. Any benefit must be viewed in context of a trade-off analysis. The goal is to

reduce the overall environmental impact to resources of greatest concern to NOAA and the public that we serve.

What do we know. We know that there is a major oil spill with an estimated 5000 bbl per day release at the sea floor. The oil at the ocean surface is a threat to several NOAA protected species such as Sperm Whales and Sea Turtles. This same oil is a threat to coastal fisheries, shorelines, and important nursery grounds nearshore including the estuarine and marsh habitats of the Louisiana coast as well as most of the northern Gulf of Mexico (the shorelines of Texas, Louisiana, Mississippi, Alabama, and Florida). In the response effort, large quantities of dispersant (more than 400,000 gallons have been applied to
date) are being used to mitigate the spill at the surface with success estimated as effective to marginally effective (the nature of the release and oil weathering have had an impact on dispersant effectiveness). We also know that the deepwater environment is not oil free. MMS estimates that natural oil seeps discharge up to 40 million gallons of oil a year into the Gulf of Mexico and there are deepwater communities that actually use methane and oil seeps (chemosynthetic
systems) as the foundation of their food web.

What we don't know. We don't fully know the mixing efficiency of the dispersant and oil at the release (we know that there is contact and mixing, but do not know if the overall effectiveness. Visual observations from the last test indicated an appreciable at the water surface. We don't fully know the overall additional risk to the deepwater communities. We have collected information as to what species and communities may be present in the deepwater, but the overall densities and populations of these resources is not nearly as well studies (and as well known) as the surface water and coastal habitats.
While some of the deepwater communities may be at a lower risk because they are adapted to an actual food web sourced from hydrocarbons such as methane vents, others may not be as tolerant. We don't fully understand the transport and fate of any oil dispersed at the sea floor (the oil will degrade, but at what rate and how far would the dispersed oil move is difficult to fully asses with the limited information that exist). We don't fully understand the plume transport as the modeling varies based on assumptions as to movement. We don't fully know if the dispersant treatment would result in a significant change in oxygen demand that might result in a low-oxygen or hypoxia condition somewhat like the hypoxic condition in the Gulf of Mexico off the Mississippi River. The deep ocean is largely unknown when contrasted with our knowledge of near surface waters and coastal waters.

During the trade-off discussions, it was clear that an assessment or monitoring component would be required for any approval and that the path forward must be managed in an adaptive way. Information from the field sampling as well as additional modeling and habitat information generated would be reevaluated in context to the overall risk and threats of the oil spill. The monitoring plan would include measurement of oxygen concentration, detectable hydrocarbons, a rapid toxicity screening method (proposed), and collection of additional water samples for laboratory analysis. The primary concerns identified by the Environmental Unit (which includes active

participation by NOAA) related to extended use of the sea floor technique over extended periods. If the pollution domes mitigate a large percentage of the spill oil, the duration of sea floor dispersant use would be measured in a couple of weeks. If the pollution dome fails (and other intervention plans fail), the duration of the spill may last another 3 months. It is the long term use of this option that is difficult to assess with limited data; therefore, there is a need for monitoring and reassessment.

The only response solution that would stop additional environmental impact is to stop the release of oil. The use of dispersants has always been a trade-off as to the lesser of overall negative environmental effects. If the sea floor dispersant technique would reduce the impacts to the overall surface waters, nearshore waters, and estuarine habitats (as well as the animals that utilize these important resources) there is merit for considering for its use. Should the technique reduce the overall dispersant application use with as much or greater overall effectiveness, this would also have merit in balancing the trade-off discussion. Should, during the monitoring and assessment, the apparent persistence of any subsurface dispersed oil plume generate a toxicity or oxygen depletion concerns greater than the net benefit for reduced surface and coastal impact, the decision could be reevaluated and sea floor dispersant application halted. The sampling and monitoring data, an observed effectiveness in reducing the surface oil threat, and continued investigations as to resources at risk and transport and fate concerns are all elements of the Adaptive Management process proposed.
In addition, addition assessments as to the possible impacts would also be conducted as part of the Natural Resource Damage Assessment process.

This brief report provides an outline of where the thought process currently stands. It is expected that a report on the limited initial sampling will be provided by the Unified Command recognizing that there were limitations that must be overcome in future sampling and monitoring efforts. The oil, unfortunately, continues to spill from the sea floor.
The only solution to stop additional environmental impact is to stop the flow of oil. The proposed technique would not eliminate the flow of oil or oil pollution, but would alter the transport and movement of a large fraction of that oil. Attached are two documents that provide some initial assessment information on the deep water environment and the possible transport based on modeling. In both, the uncertainty identified is the cause to proceed with caution using monitoring and an adaptive management posture with wide stakeholder involvement. While the information provided in this write up reflects what is known and unknown, it has not been vetted through a detailed review process… such a process will be an on going expectation of the path forward.
Charlie Henry
NOAA Scientific Support Coordinator and RRT6 representative